

APPENDIX A

Ground Water Sampling Procedures

At each site, the outside faucet or hydrant located closest to the well was chosen as the sampling location. A hose was connected to the faucet or hydrant with a flow splitter and a short section (approximately 5 feet) of hose placed at the end. The faucet or hydrant was then turned on the full amount possible. The longer, or main hose was, given the majority flow of water with a controlled amount of water flowing into a bucket from the shorter hose.

A bucket was used to best imitate a flow-through chamber in order to best represent the zone or zones of the aquifer in which the well was installed. The meters used to collect the field parameter data were placed in the bucket. The meters used were for measuring temperature, pH, and specific conductance.

Measurements with the meters were taken about every five minutes and recorded on a field sheet. Sampling was not conducted until the meters had stabilized for at least two measurements. The stabilized field parameter measurements indicate chemical stability of the ground water entering the well and directly being pumped out. This was important in order to sample for aquifer characteristics versus the water that was allowed to sit in the well casing, where the water chemistry could be altered by the materials of the well casing and the atmosphere.

After the chemical stability of the ground water had been determined, the hoses were removed. The faucet or hydrant was allowed to run for 10-15 seconds prior to the samples being collected. Latex gloves were worn in order to eliminate cross contamination from the hands.

A bacteria sample was collected in a sterile 250 ml polyethylene bottle, the bottle was filled to the neck and tightly capped. Care was taken to not touch the faucet or hydrant with the sample bottle for all samples collected.

Two 40 ml glass bottles were used for collecting VOC samples. All bottles were filled to the top, with meniscus at the lip of the bottles and then tightly capped with a teflon-lined cap. The bottles were checked for air bubbles, if there was a bubble more water was immediately added to remove the air and the bottle was then tightly resealed.

Clean, one liter cubitainers were filled for the nutrient and chloride samples. A total of two cubitainers were used, one preserved with sulfuric acid and one unpreserved.

Clean, one liter amber glass bottles were used to collect the pesticide samples. Four, unpreserved, bottles were filled at every site.

All samples were labeled with a site identification number, a project number, the type of analysis, the date, and the time of collection. These were then placed in a cooler with ice, until arriving at the Idaho State Bureau of Laboratories or to Horizon Air to be air freighted to the University of Idaho Laboratory at the end of the day.

The field sheet was filled out to note all necessary sampling procedure information at every site, and any comments relevant to the site. In addition, a chain of custody sheet was filled out for the VOC samples. All equipment used at each site was triple rinsed with deionized water then carefully packed for use at the next site.

APPENDIX B

QUALITY ASSURANCE / QUALITY CONTROL

All probes used for measuring field parameters were inspected every morning before leaving the office. Any necessary repairs or cleaning was conducted at the DEQ laboratory before going to the sampling sites. The condition and number of all necessary sample containers was checked before leaving for the sampling sites.

Prior to its use at each site the Orion pH meter was calibrated daily with a fresh pH standard of 4 SU and 7 SU. If the ground water had a pH of greater than 7.8 SU the pH meter was re-calibrated to a pH standard of 7 SU and 10 SU.

Temperature was checked with three different instruments at each site with a non-mercury thermometer, the pH meter and the conductivity meter. The recorded ground water temperature for the field sheets were taken from the conductivity meter. The recorded air temperature on the field sheets was taken from the non-mercury thermometer.

The Orion conductivity meter was calibrated at each site with a conductivity standard as close as possible to the measurement at each site. A small plastic container of the fresh standard was placed in the bucket with the meter probes and allowed to equilibrate to the temperature of the ground water being sampled. After the samples were collected, the conductivity probe was placed into the conductivity standard to determine the correction factor.

The bucket, all hoses and splitters were kept (physically) clean. The hoses were drained at each site. The bucket, splitter and short hose were rinsed with deionized water at every site prior to packing back into the vehicle (Nielson 1991).

Latex gloves were worn when collecting all samples. All samples were collected in clean containers and were labeled with the site identification number, date, time of sample collection, project number, and type of analysis. This information was also recorded on the field sheets, along with the field parameters and notable site conditions. All necessary laboratory forms were filled out for all samples collected.

Pesticide samples were packed in ice and promptly shipped to Analytical Sciences Laboratory at the University of Idaho at the end of the day. The bacteria, organic and inorganic samples were packed in ice until taken to the State of Idaho Bureau of Laboratories in Boise, Idaho at the end of the day.

A trip blank was filled in the laboratory each sampling morning and carried in the cooler all day.

This trip blank was analyzed for VOCs. In addition to a duplicate VOC sample taken at one site each sampling day. Duplicate pesticide samples were taken at one site per sampling day, also.

APPENDIX C

Selected References

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